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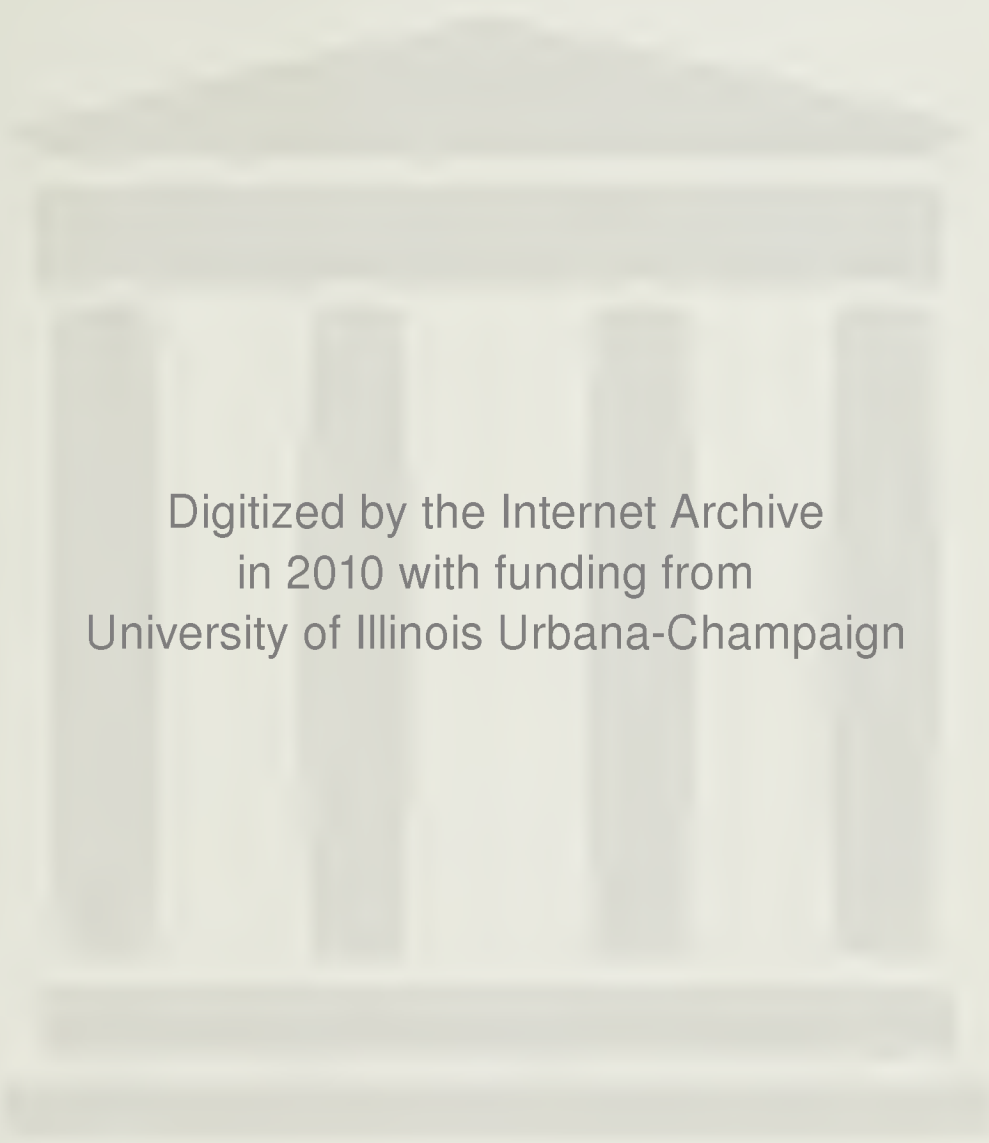
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**SPACE SEARCHING BEHAVIOR AND RELATED SUBJECTS:
Introduction and Bibliography**

Russell B. Capelle, Jr., Ph.D.
Assistant Professor of Geography
University of Rhode Island

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SPACE SEARCHING BEHAVIOR AND RELATED SUBJECTS:

INTRODUCTION AND BIBLIOGRAPHY

by

Russell B. Capelle, Jr., Ph.D.
Assistant Professor of Geography
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INTRODUCTION

Individuals search for, choose, sample, and evaluate destinations during the "space searching process"; they operate within a very individualized spatial reference system.

The recognized elements and configuration of one's spatial reference system depend upon factors which influence the decisions one makes. When traveling for the same purpose, different individuals affected by common influences behave in much the same way as they search for similar types of satisfaction. There are similarities in the structure of spatial reference systems for like-minded groups of travelers and, therefore, there are teleological categories of space searching behavior.

A better understanding of all types of space searching behavior becomes important as a means to an end -- greater efficiency in planning. More efficiently locating shopping centers has resulted from an increased ability to understand consumer decision-making behavior and to approximate the spatial reference system of the potential market. Factors influencing journey-to-work behavior are indirectly important in carefully

situating production locations within the spatial reference system of the potential labor force. Individuals anticipating a move to a new residential location make reasonably predictable decisions, depending upon socio-economic similarities, and select residential sites within their spatial reference systems. Subdivisions are located and planned by those developers with at least an implicit understanding of the ways in which individuals make site selection decisions and choose among the opportunities available to them within certain spatial boundaries.

"The notion of searching for an objective is a very general one that underlies many spatial activities" (2, 492). A variety of seemingly separate research clusters may be synthesized under the heading of space searching behavior; recognition of that fact is more recent than most geographers might think. For example, although research under the heading of journey-to-work studies has been with us for decades, attention to behavioral aspects of the employment space searching process (rather than to the journey per se) is a current focus of studies in that general category. Recognition of space searching behavior as an eclectic category of geographic research was initiated by Peter Gould in the mid-1960's and later substantiated by Lawrence Brown, Frank Horton, Eric Moore, and their colleagues. Because many other geographers have now become interested in the individual's behavior within his spatial reference system, the number of writings under a recently unrecognized rubric has increased greatly in the past five years.

DEVELOPMENT OF RESEARCH CLUSTERS

Categorized by the purpose of the search and listed intuitively in chronological order¹, there appear to be five basic forms of space searching behavior:

<u>Form of Space Searching Behavior:</u>	<u>Purpose of Space Searching Activity:</u>
1. Entrepreneurial	Production site selection
2. Employment	Employment site selection
3. Consumer	Shopping for goods or services
4. Residential	Residential site selection
5. Recreation	Recreation destination selection ²

The bibliography provided here is selective and focuses primarily on recent behavioral studies.³

Gould's initiating study in 1966 (106) provides an overview of space searching procedures in other disciplines -- strategy, mineralogy, searching mathematical surfaces, search behavior of animals, and searching mazes.⁴ His conclusions in that overview were largely negative; little promise of employing such procedures

¹Intuitive chronological order of initiating research under or related to the associated traditional heading. For example, entrepreneurial space searching behavior appears first because research in classical economic location theory became increasingly salient over the first four decades of this century. Other clusters appeared later.

²Urban social travel destinations as well as indoor and outdoor recreation destinations.

³If the bibliography were all-inclusive and not focused primarily on recent behavioral studies, entrepreneurial space searching behavior could be traced at least indirectly back to Alfred Weber's classic work in 1909 (if not back to von Thunen in 1826) and the plethora of classical location theory studies would be included.

⁴See also citations 61, 77, and 99 for coverage of extra-geographic research.

in geographical contexts was offered. Getis and Boots in 1971 (84) arrive at negative conclusions concerning procedural cross-fertilization from studies of spatial behavior of rats, although Esser in the same year (78) discusses the similarities between human and animal spatial behavior. Interestingly, Golledge, Brown, and Williamson in 1972 (96, 61) -- citing the same source as mentioned above -- state that "Gould summarized an extensive literature related to space searching activities much of which has proved useful to the behavioral analyst." And Abler, Adams, and Gould in 1971 (2, Chapters 12 and 13) begin to operationalize many space searching concepts and to make progress that would not have been expected, given the earlier negative conclusions of one of the authors.

It should now be recognized that it is the basic concept that is of use to geographers -- as a frame of reference for integrating many microscopic research clusters -- and not so much the procedures used in and borrowed from other disciplines. In fact, there is at least the particularly geographic "procedure" of centrophoric analysis that can be and lately has been applied in morphological studies of household spatial reference systems (34, 35, 131). Once the space searching rubric is adopted following its diffusion through other disciplines and to geography, the inferential qualities of the centrophoric technique become far more salient in studies of the factors behind the formation of spatial reference systems (35).

Although, when traced to pre-behavioral days, entrepreneurial space searching behavior is perhaps the earliest investigated form, it is not the most well-represented in the behavioral literature. Following the wealth of early studies under the heading of classical economic location theory, the focus on behavioral aspects of entrepreneurial search is best represented by Simon (278 - 281) and by Cyert and March (58) -- and most recently by Pred (250) and by Wolpert (329, 330, 333, 334, 335).

Interest in behavioral aspects of the journey-to-work (employment space searching behavior) postdates an interest in the structural characteristics of the journey itself and in the socio-economic characteristics of those who are making the journey. Representing the more recent cluster are such investigators as Kain (154 - 157) and Wheeler⁵.

An interest in consumer decision-making behavior may be indirectly traced to Reilly in 1929, but is more appropriately represented by such later writers as Huff (138, 139, 141), and Golledge (90, 91, 93) and Yuill (337)⁶. Golledge's and Yuill's research would fit most appropriately under the heading of consumer space searching behavior.

⁵Coverage of pre-behavioral as well as behavioral investigations under the heading of journey-to-work studies is provided by James O. Wheeler in other Exchange Bibliographies (Numbers 65 and 324-325). See also Exchange Bibliography Number 40 for earlier works.

⁶See Exchange Bibliographies 208 (Kessler) and 230 (Andrews) for relevant spatial and non-spatial investigations.

Investigations of the "intra-urban migration process" (residential space searching behavior⁷) are the most numerous. Lawrence Brown, Frank Horton, Eric Moore, and their colleagues have provided a variety of thought-provoking results on this one form of space searching behavior and have, in fact, suggested the likelihood that space searching behavior is the appropriate rubric under which many other forms can be categorized. Studies of the spatial aspects of the residential site selection process have provided concepts, terminology, and methodology for researchers interested in other subsets of the space searching cluster.

Although implicitly initiated by Lucas (194 - 201) in the mid-1960's, a clear and explicit focus on recreation space searching behavior (34, 35) is a very recent phenomenon. There is potential for much fruitful comparative research on recreation space searching behavior in the future -- building upon the few contributions in recent years⁸.

Terminological Confusion Among the Clusters

Common to all geographic investigations of space searching behavior is a focus on the spatial reference system of the individual or the household -- and on the subsets of that system. No matter what type of spatial search one focuses upon, there is

⁷ "Inter-urban migration" studies (and perhaps some "mental map" studies -- given a focus on residential desirability) would also be included in this grouping. In addition to those included here, relevant citations may be found in Exchange Bibliographies 104 (Daniel), 497 (Sharma), and 501 (Bartholomew).

⁸ On various aspects of recreation, the following Exchange Bibliographies may be consulted: 153 (Westerlund, Church, and Weaver); 159 (Ditton); 190 (Lancaster and Nicholls); 193 (Ditton); and 245 (Perry). On a subset of recreation space searching behavior -- urban social travel -- see 173 (Stutz).

a need to accept a common terminology.

Although "awareness space" and "activity space" should now be commonly accepted subsets of the individual's (or household's) spatial reference system, many related terms have been used confusingly. Terminological confusion often shadows any flock of investigators converging on a new "pigeon-hole" -- at least for a time. And so it is for those interested in space searching behavior.

Only if there is a common agreement on terms for the subsets of spatial reference systems, can there be a synthesis of diverging research clusters under the rubric of space searching behavior. Clearly, though, no common agreement has yet been reached because: (a) explicit synthesis of the five subcategories under the heading of space searching behavior has not previously been suggested or recognized as likely; and (b) investigators in each subcategory perhaps did not recognize the "pigeon-hole" upon which they were converging. To put an end to a "chicken-and-egg" process, I would suggest that a synthesis of five subclusters under the rubric of space searching behavior is indeed appropriate and that the following definitional distinctions are acceptable to all investigators who have been "pigeon-holed" before and after the fact.

Borrowing from the investigators of the intra-urban migration process (residential space searching behavior), awareness space is defined as the set of destinations accessible to the individual (or household) and about which he possesses some knowledge -- resulting from direct or indirect contact.

The individual's choice of a destination is thus greatly affected by the amount and availability of information (that is, by the spatial properties of his "information field" (228). Given an awareness of opportunities, destinations may be chosen, sampled, and evaluated. Therefore, activity space is defined as the subset of destinations with which direct contact has been made. The character of the activity space is a function of the intensity of the respondent's past experience.

Lewin's (181) "phenomenal environment" and Sonnenfeld's (285) "operational environment" correspond to "opportunity set" or "vacancy set", used by many authors; these would include the destinations realistically available to a household (the operational universe within which the awareness space destinations lie). Sonnenfeld's (285) "perceptual environment," Wolpert's (328) "action space," and Tolman's (306) "cognitive map" correspond to the activity space, although Brown and Moore (24, 1) define "action space" as "those locations for which the intended migrant possesses sufficient information to assign place utilities" (presumably, then, a subset of the awareness space but not exactly coincident with the activity space, as defined here). Sonnenfeld's "behavioral environment" corresponds to the activity space and Simon (280) uses the related term, "activity system."

Brown and Moore (24, 8) consider the activity space to include the set of locations associated with the household's day-to-day activities which yield information from "direct contact" while there is a separate "indirect contact space" based upon information derived at second hand from such channels as

acquaintances' experiences and mass media. The information-yielding network of personal contacts has been variously defined -- "acquaintance field" (48), "acquaintance circle," or more popularly "social circle." Furthermore, Brown and Holmes (19, 308) include in the "search space" those locations to which an intended migrant aspires; the searcher's "aspiration region" (or "initial aspiration subregion") provides environmental and locational criteria according to which the search space is defined. Finally, Gould's (104, 111, 112) research on "mental maps" suggests that awareness space and mental map are not dissimilar terms.

Given this bewildering terminological disarray, it is certainly useful to show the relationship of each of these concepts to space searching behavior. Provided below is the intuitive reduction sequence (largest space to smallest space) for the subsets of the spatial reference system of a typical individual or household. The phraseology is general enough to be appropriate to any form of space searching behavior.

The world provides many possible destinations, only a few of which are realistically available to a household (the vacancy set or opportunity set). The household is aware of only some of those (awareness space); place utilities are assigned to fewer still (action space); and aspirations are attached to even fewer still (aspiration region). Given the set of destinations to which the household aspires, only some of these are singled out for search (search space) and only a few of these are frequently visited and become permanent components of the activity space.

Although best visualized in graphic form (34), the reduction sequence is left in verbal form because subsets of the individual's spatial reference system are highly irregular -- "amoeba-like" with a "swiss cheese" character in almost all cases. It is a very rare individual indeed who has subsets morphologically superimposed to resemble concentric ripples outward from his residence, the central focus!

It is best to restrict the proliferation of jargon and adopt activity space and awareness space as the basic terms to be used in morphological investigations of the household's spatial reference system. Opportunity set and search space are also useful and quite straightforward. Additional terms, so many of which begin with the redundant "a", should only be used where they are absolutely necessary to a clear understanding of the results of an investigation.

Once adopted, the basic terms are appropriate for all types of "space searchers" -- entrepreneurs, potential employees, shoppers, movers, and social and recreation travelers.

The Parent Cluster

Environmental perception and behavior of the individual are subjects receiving a great deal of attention in the recent geographic literature. "The inquiries of human geographers into perception embrace larger arenas than the precise physiological definitions of perception proposed by thirty years of clinical psychology or the carefully circumscribed delineations of several generations of philosophers" (76, 212).

English and Mayfield (76, 211-219) give an excellent review of the status of studies in environmental perception and behavior. Golledge, Brown, and Williamsen (96, 59) provide another⁹ excellent overview, offering the following identification of the "behavioral point of view". "...The behavioral point of view involves (a) the researcher viewing the real world from a perspective of those individuals whose decisions affect locational or distributional patterns, and (b) trying to derive sets of empirically and theoretically sound statements about individual, small group, or mass behaviors."

An interest in the many forms of space searching behavior is held by geographers with this "behavioral point of view." Space searching behavior in all of its variety, then, promises to be particularly and increasingly well-represented in the geographic literature of the future. Given that conclusion, it is appropriate to place before those with the behavioral point of view the many sources (including sources categorized with hindsight) which lend credence to the validity of space searching investigations. A better understanding of all types of space searching behavior certainly has become important as a means to an end -- greater efficiency in planning for locations which logically must fall within the spatial reference systems of those who will use them.

⁹In addition to these works and the "general" section of this bibliography (next page), Exchange Bibliographies to consult would include: 93 (Harrison); 123 (Bell and MacGreevey); 235 (Preisner); 327 (Ostrander); 514 (Ewing, Lieber, and Rushton); 516 (Harrison); and 526 (May).

Organization of the Bibliography

Citations have been placed in the following categories, whether or not the author or authors of the work explicitly suggest that it is appropriate to do so. Given that it is the most well-represented subset of investigations, research on residential space searching behavior (particularly on the intra-urban migration process) is cited most frequently. Pre-behavioral investigations under the more traditional headings of location theory, marketing geography, journey-to-work studies, internal residential structure of cities, recreation geography, and the like are purposefully under-represented. Investigations related to recreation space searching behavior and to centographic analysis are well-represented because they are interests of the author. See the notes in the previous section for listings of relevant Exchange Bibliographies.

Inclusions here are those that most logically provide foundations for a greater understanding of space searching behavior -- predecessors, development of concepts and terminology, empirical investigations, and appropriate methodology. Beside each of the headings are listed the citation numbers of the sources which -- in this author's opinion -- apply to them. Bibliographic works are denoted by an asterisk (*).

I. Space Searching Behavior

- A. General Investigations: 2, 4, 9, 10, 11, 16*, 32, 47, 48, 49, 51, 52, 53, 54, 55, 56, 61, 62, 65, 66, 67, 69, 76, 78, 84, 86, 89, 91, 92, 94, 96, 97, 98, 99*, 101, 102, 103, 104, 105, 106, 107, 108, 109, 111, 112, 114*, 120, 122, 123, 124, 128, 129, 131, 133, 134, 137, 147, 149, 150, 160, 165, 167, 170, 171, 179, 181, 185, 186, 187, 188, 189, 191, 192, 193, 202, 203, 204, 206, 207, 208, 209, 226, 227, 228, 241, 242, 243, 244, 247, 252, 253, 256, 257, 258, 259, 260, 262, 263, 264, 266, 267, 273, 276*, 283, 284, 285, 286, 287, 290, 291, 292, 295, 304, 305, 306, 307, 317, 318, 320, 321
- B. Entrepreneurial Space Searching Behavior: 1, 58, 100, 119, 142, 143, 144, 145, 146, 168, 182, 231, 250, 278, 279, 280, 281, 327, 329, 330, 333, 334, 335
- C. Employment Space Searching Behavior: 154, 155, 156, 157, 323
- D. Consumer Space Searching Behavior: 64, 90, 93, 138, 139, 140, 337
- E. Residential Space Searching Behavior: 3, 17, 18, 19, 20, 21, 22, 23, 24, 25, 31, 40, 41, 42, 43, 44, 45, 46, 50, 59, 68, 73, 74, 75, 95, 110, 115, 132, 135, 136, 148, 152, 153, 154, 155, 156, 157, 158, 159, 166, 173, 174, 175, 176, 210, 213, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 229, 230, 234, 235, 236, 240, 246, 251, 254, 255, 277, 288, 293, 296, 308, 314, 322, 328, 331, 332
- F. Recreation Space Searching Behavior: 5, 12*, 13, 14, 15, 30, 33, 34, 35, 57, 60, 63, 71, 72, 79, 80, 87, 113, 127, 151*, 177, 190, 194, 195, 196, 197, 198, 199, 200, 201, 211, 212, 215, 233, 237, 239, 289, 309, 310, 311, 315, 324, 325, 326

II. Related Subjects

- A. Centographic Analysis: 6, 7, 26, 36, 37, 38, 70, 81, 82, 83, 85, 88, 111*, 110, 121, 125, 126, 130, 131, 141, 169, 172, 178, 180, 183, 184, 205, 232, 238, 248, 249, 269, 270, 275, 297, 298, 299, 300, 301, 302, 303, 312, 319, 336
- B. Perception of Natural Hazards: 27, 28, 29, 161, 162, 163, 164, 214, 265, 268, 274, 282, 316
- C. Space Searching Procedures in Other Disciplines: 8, 39, 61, 77*, 78, 99*, 106, 117, 118, 245, 261, 271, 272, 276*, 294, 313

1. Aangeenbrug, R. T. "Regional Perception and Its Effect on Industrial Location," Kansas Business Review, 21, 1968, 3-6.
2. Abler, Ronald; John S. Adams; and Peter Gould. Spatial Organization: The Geographer's View of the World. Englewood Cliffs, New Jersey: Prentice-Hall, 1971.
3. Adams, John S. "Directional Bias in Intra-Urban Migration," Economic Geography, 45, 1969, 302-23.
4. Appleyard, Donald; Kevin Lynch; and John R. Myer. The View from the Road. Cambridge: Harvard University Press, 1963.
5. Atkisson, Arthur A., and Ira M. Robinson. "Amenity Resources for Urban Living," in Perloff, Harvey S., ed., The Quality of the Urban Environment. Baltimore: Johns Hopkins Press, 1969.
6. Bachi, Roberto. "Standard Distance Measures and Related Methods for Spatial Analysis," Papers of the Regional Science Association, 10, 1962, 83-132.
7. _____. "Statistical Analysis of Geographical Series," Bulletin de l'Institut International de Statistique, 36, 1957, 229-40.
8. Batschelet, E. Statistical Methods for the Analysis of Problems in Animal Orientation and Certain Biological Rhythms. Washington, D.C.: American Institute of Biological Sciences, 1965.
9. Beck, Robert. "Spatial Meaning and the Properties of the Environment," pp. 18-24 in Lowenthal, David, ed., Environmental Perception and Behavior. Chicago: University of Chicago Press (Research Paper No. 109), 1967.
10. Beesley, Michael E. "The Value of Time Spent in Traveling: Some New Evidence," Economica, May 1965.
11. Berry, Brian J.L. "A Synthesis of Formal and Functional Regionalization Using General Field Theory of Spatial Behavior," in: Berry, B.J.L., Marble, D. F., eds., Spatial Analysis. Englewood Cliffs, New Jersey: Prentice-Hall, 1967.
12. Boulding, Jim. "Selected Annotated Bibliography of Literature on Outdoor Recreation," Geographical Paper No. GP-2, Department of Geography, University of Reading, Whiteknights Reading RG6 2AF, England. Second Edition, January 1971.

13. Bayenter, Edwin von. "Land Values and Spatial Structure: A Comparative Presentation of Agricultural, Urban, and Tourist Location Theories," Papers of the Regional Science Association, 18, 1967, 231-42.
14. Bray, Joann M. "Some Perceptual, Behavioral and Semantic Complexities of Recreational Space," unpublished M.A. Thesis, University of Chicago, 1969.
15. Brougham, J. E. "An Evaluation of the Impact of Crowding Upon the Quality of the Recreation Experience," unpublished M.A. Thesis, University of Western Ontario, 1969.
16. Brown, L. A. Diffusion Processes and Location: A Conceptual Framework and Bibliography. Philadelphia: Regional Science Research Institute, Bibliography Series No. 4, 1968.
17. Brown, Lawrence A. "Population and Migration in an Urban Context: A Spatial Perspective," Columbus: Ohio State University, Department of Geography Discussion Paper No. 13, 1970.
18. _____ and John Holmes. "Intra-Urban Migrant Lifelines: A Spatial View," Demography, 8, 1971, 103-22.
19. _____ and _____. "Search Behavior in an Intra-Urban Migration Context: A Spatial Perspective," in Brown, Lawrence A., "Population and Migration in an Urban Context: A Spatial Perspective." Columbus: Ohio State University, Department of Geography Discussion Paper No. 13, 1970. (Also in: Environment and Planning, 3, 1971, 307-26.
20. _____ and Frank E. Horton. "Functional Distance: An Operational Approach," Geographical Analysis, 2, 1970, 76-82.
21. _____ and David B. Longbrake. "Migration Flows in Intra-Urban Space: Place Utility Considerations," Annals, Association of American Geographers, 60, 1970, 368-84.
22. _____ and _____. "On the Implementation of Place Utility and Related Concepts: The Intra-Urban Migration Case," in Cox, Kevin, and Golledge, Reginald, eds., Behavioral Problems in Geography: A Symposium. Evanston, Illinois: Northwestern University Studies in Geography No. 17, 1969.

23. _____ and Eric G. Moore. "Intra-Urban Migration: An Action Oriented Framework," Departments of Geography, University of Iowa and Northwestern University, 1968. (Himeographed)
24. _____ and _____. "The Intra-Urban Migration Process: A Perspective," Geografiska Annaler, Series B, 52, 1970, 1-13. (Also in: Yearbook of the General Systems Society, No. 15).
25. _____, Frank E. Horton and Robert I. Wittick. "Place Utility and the Normative Allocation of Intra-Urban Migrants," Demography, 7, 1970.
26. _____, Eric G. Moore, and William Moultrie. "TRANSMAP: A Program for Planar Transformation of Point Distributions," Columbus, Ohio: Ohio State University, Department of Geography Discussion Paper No. 3, 1969.
27. Burton, Ian and Robert W. Kates. "The Flood Plain and the Seashore: A Comparative Analysis of Hazard Zone Occupance," Geographical Review, 54, 1964.
28. _____ and _____. "Perception of Natural Hazards in Resource Management," Natural Resources Journal, 3, 1964, 412-41.
29. _____, P. A. Noad, John R. Mather, and Rodman E. Snead. The Shores of Megalopolis: Coastal Occupance and Human Adjustment to Flood Hazard. Elmer, New Jersey: C. W. Thornthwaite Associates, Publications in Climatology XVII, No. 3, 1965.
30. Burton, Thomas L. and P. A. Noad. Recreation Research Methods: A Review of Recent Studies. Birmingham, England: Centre for Urban and Regional Studies, University of Birmingham, 1968.
31. Butler, Edgar W., F. Stuart Chapin, Jr., George C. Hemmens, Edward J. Kaiser, Michael A. Stegman, and Shirley F. Weiss. Moving Behavior and Residential Choice: A National Survey. Chapel Hill, North Carolina: Center for Urban and Regional Studies, Institute for Research in Social Science, University of North Carolina, 1968.
32. Buttimer, A. (Sister Mary Annette, O.P.). "Social Space in Interdisciplinary Research," Geographical Review, 59, 1969, 417-26.
33. Capelle, Russell B., Jr. "The Impact of Snow-Making Technology on the Development of Southern New England Ski Areas," unpublished M.A. Thesis, Clark University, 1971.

34. Capelle, Russell B., Jr. "Morphological Characteristics of Household Recreation Spaces," paper presented at the 49th Annual Meeting of the New England - St. Lawrence Valley Geographical Society, West Point, New York, October 18-19, 1974.
35. _____. "Space Searching Behavior: Recreation Space from the Urban Resident's Point of View," unpublished Ph.D. Dissertation, University of Pittsburgh, 1973.
36. Caprio, Raphael J. "An Introduction to Measures of Centrophraphy," unpublished seminar paper, Department of Geography, University of Cincinnati, 1968.
37. _____. "A Centrophraphical Analysis of Substandard Housing Population Distribution," unpublished M.A. Thesis, University of Cincinnati, 1969.
38. _____. "Centrophraphy and Geostatistics," Professional Geographer, 22, 1970, 15-19.
39. Carr, A. "Orientation Problems of the High Seas Travel and Terrestrial Movements of Marine Turtles," American Scientist, 50, 1962, 359-74.
40. Chapin, F. Stuart, Jr. "Activity Systems and Urban Structure: A Working Schema," Journal of the American Institute of Planners, 34, 1968, 11-18.
41. _____ and Henry C. Hightower. Household Activity Systems: A Pilot Investigation. Chapel Hill, North Carolina: Center for Urban and Regional Studies, Institute for Research in Social Science, University of North Carolina, 1966.
42. _____ and T. H. Logan. "Patterns of Time and Space Use," pp. 305-32 in Perloff, Harvey S., ed., The Quality of the Urban Environment. Baltimore: Johns Hopkins Press, 1969.
43. _____ and Shirley F. Weiss. Factors Influencing Land Development. Chapel Hill, North Carolina: Center for Urban and Regional Studies, Institute for Research in Social Science, University of North Carolina, 1962.

44. Clark, W.A.V. "Information Flows and Intra-Urban Migration: An Empirical Analysis," Proceedings of the Association of American Geographers, 1, 1969, 38-42.
45. _____. "Measurement and Explanation in Intra-Urban Residential Mobility," Tijdschrift voor Economische en Sociale Geografie, 61, 1970, 49-57.
46. _____. "A Test of Directional Bias in Residential Mobility," pp. 1-28 in: McConnell, H., and Yaseen, D. W., eds., Models of Spatial Variation. DeKalb, Illinois: Northern Illinois University Press, 1971.
47. Converse, Philip E. "Survey Research and the Decoding of Patterns in Ecological Data," in: Dogan, Mattei, and Rokkan, Stein, eds., Quantitative Ecological Analysis in the Social Sciences. Cambridge: MIT Press, 1969.
48. Cox, Kevin R. "The Genesis of Acquaintance Field Spatial Structures: A Conceptual Model and Empirical Tests," in: Cox, Kevin R., and Golledge, Reginald G., eds., Behavioral Problems in Geography: A Symposium. Evanston, Illinois: Northwestern University Studies in Geography, No. 17, 1969.
49. _____. "Geography, Social Contexts, and Welsh Voting Behavior: 1861-1951," unpublished manuscript, Department of Geography, Ohio State University, Columbus, Ohio, 1968.
50. _____. "Residential Relocation and Political Behavior: Conceptual Model and Empirical Tests." Ohio State University, Department of Geography, 1968. (Mimeographed)
51. _____. "The Spatial Components of Urban Voting Response Surfaces," Economic Geography, 47, 1971, 27-35.
52. _____. "The Spatial Structuring of Information Flow and Partisan Attitudes," in: Dogan, Mattei, and Rokkan, Stein, eds., Quantitative Ecological Analysis in the Social Sciences. Cambridge: MIT Press, 1969.
53. _____. "Suburbia and Voting Behavior in the London Metropolitan Area," Annals, Association of American Geographers, 58, 1968, 111-27.
54. _____. "The Voting Decision in a Spatial Context," in: Board, Christopher, Richard J. Chorley, and Peter Haggett, eds., Progress in Geography. London: Edward Arnold, 1969.

55. _____ and Reginald G. Golledge, eds. Behavioral Problems in Geography: A Symposium. Evanston, Illinois: Northwestern University Studies in Geography No. 17, 1969.
56. _____ and Georgia Zannaras. "Designative Perceptions of Macro-Spaces: Concepts, A Methodology, and Applications." Columbus, Ohio: Ohio State University, Department of Geography Discussion Paper No. 17, December 1970.
57. Crevo, Charles C. "Characteristics of Summer Week-End Recreational Travel," Thesis, Bureau of Highway Traffic, Yale University, 1962 (in: Highway Research Record, 44, 1963, 51-60.)
58. Cyert, R. M., and J. G. March. A Behavioral Theory of the Firm. Englewood Cliffs, New Jersey: Prentice-Hall, 1963.
59. Davies, W.K.D. "Latent Migration Potential and Space Preferences," Professional Geographers, 18, 1966, 300-304.
60. Deasy, George F., and Phyllis R. Griess. "Impact of a Tourist Facility on its Hinterlands," Annals, Association of American Geographers, 56, 1966, 290-306.
61. Dobbie, James M. "A Survey of Search Theory," Journal of the Operations Research Society of America, 16, 1968, 525-37.
62. Dogan, Mattei, and Stein Rokkan, eds. Quantitative Ecological Analysis in the Social Sciences. Cambridge: MIT Press, 1969.
63. Dower, Michael. "Leisure -- Its Impact on Man and the Land," Geography, 55, 1970, 253-60.
64. Downs, Roger M. "The Cognitive Structure of an Urban Shopping Center," Environment and Behavior, II, 1970, 13-39.
65. _____. "Geographic Space Perception: Past Approaches and Future Prospects," pp. 65-108 in: Board, C., R. Chorley and P. Haggett, eds., Progress in Geography (Volume 2). New York: St. Martin's Press, 1970.
66. _____, and David Stea. "Environmental Cognition and Behavior," EDRA Two (Proceedings of the Second Annual Environmental Design Research Association Conference, October 1970, Pittsburgh, Pennsylvania), 1970, Session Two, 95-142.
67. _____ and David Stea, eds. Image and Environment. Chicago: Aldine, 1973.

68. Duncan, B. "Intra-Urban Population Movement," pp. 297-309 in: Halt, P. K., and A. J. Reiss, eds., Cities and Society. New York: The Free Press, 1957.
69. Dykman, John W. "Planning and Decision Theory," Journal of the American Institute of Planners, 27, November 1961.
70. Eells, Walter Crosby, and H. Bosset. "A Mistaken Conception of the Center of Population," Journal of the American Statistical Association, 25, 1930, 33-40.
71. Ellis, Jack B. and D. N. Milstein. "A Behavior-Specific Component to System Construct for Traffic Flows," Proceedings, Third International Symposium on Traffic Flow, New York, June 1965.
72. _____ and Carlton S. Van Doren. "A Comparative Evaluation of Gravity and System Theory Models for Statewide Recreational Traffic Flows," Journal of Regional Science, 6, 1966, 57-70.
73. Ellis, Raymond H. "A Behavioral Residential Locational Model," unpublished Master's Thesis, Northwestern University, 1966.
74. _____. "A Behavioral Residential Model," Technical Report, The Transportation Center, Northwestern University, 1966.
75. _____ and Richard D. Worrall. "Toward Measurement of Community Impact: The Utilization of Longitudinal Travel Data to Define Residential Linkages," Highway Research Record, 277, 1969, 25-36.
76. English, Paul Ward, and Robert C. Mayfield. Man, Space, and Environment. New York: Oxford University Press, 1972.
77. Enslow, Philip H. "A Bibliography of Search Theory and Reconnaissance Theory Literature," Naval Research Logistics Quarterly, 13, 1966, 177-202.
78. Esser, Aristide H. Behavior and Environment: The Use of Space by Animals and Men. New York: Plenum Press, 1971.

79. Evans, John S. and Carlton S. Van Doren. "A Measurement of the Demand for Recreational Facilities at Lewis and Clarke Lake," South Dakota Business Review, February 1960.
80. Foster, H. D., W.R.D. Sewell, eds. Resources, Recreation and Research (Western Geographical Series Vol. 3). Victoria, B.C.: Department of Geography, University of Victoria, 1970.
81. Fox, W. T. "FORTRAN IV Program for Vector Trend Analysis of Directional Data," Computer Contribution No. 11, State Geological Survey, University of Kansas, 1967.
82. Furfey, Paul. "A Note on Lefever's Standard Deviatonal Ellipse," American Journal of Sociology, 1927, 94-98.
83. Galvani, Luigi. "Sulla determinazione del centro de gravita e del centro mediano di una popolazione, con applicazioni alla popolazione italiani cesnits il 10 dicembre 1921," Metron, 11, June 1933, 19-28.
84. Getis, Arthur, and Barry N. Boots. "Spatial Behavior: Rats and Man," Professional Geographer, 23, 1971, 11-14.
85. Gibbs, Jack. "Some Measures of Spatial Distribution," Urban Research Methods, 1965, 235-49.
86. Gibson, James J. Perception of the Visual World. Boston: Houghton-Mifflin, 1950.
87. Gillespie, Glenn A. "An Evaluation of the Factors Affecting the Demand for Water-Oriented Recreation," unpublished Ph.D. Dissertation, University of Missouri, June 1966.
88. Gini, C., and Luigi Galvani. "Di Talume estensioni dei concetti di media a carcatteri qualitativi," Metron, 8, July 1929, 3-209.
89. Goldschneider, C. "Differential Mobility of the Older Population," Journal of Gerontology, 21, 1966, 103-8.
90. Golledge, Reginald G. "Conceptualizing the Market Decision Process," Journal of Regional Science, 7, (supplement), December 1967, 239-58.
91. _____. "The Geographical Relevance of Some Learning Theories," paper presented at the meeting of the Association of American Geographers, Washington, D.C., 1968.

92. _____. "Process Approaches to the Analysis of Human Spatial Behavior," Columbus: Ohio State University, Department of Geography Discussion Paper No. 16, November 1970.
93. _____, and Lawrence A. Brown. "Search, Learning, and the Market Decision Process," Geografiska Annaler, Series B, 49, 1967, 116-24.
94. _____, and Gerard Rushton. Multi-Dimensional Scaling: Review and Geographical Applications. (Commission on College Geography, Technical Paper No. 10). Washington, D.C.: Association of American Geographers, 1972.
95. _____, R. Briggs, and D. Demko. "The Configuration of Distance in Intra-Urban Space," Proceedings of the Association of American Geographers, 1, 1969, 60-65.
96. _____, Lawrence A. Brown, and Frank Williamson. "Behavioural Approaches in Geography: An Overview," The Australian Geographer, XII, 1972, 59-79.
97. Goodey, Brian R. "Messages in Space: Some Observations on Geography and Communications," North Dakota Quarterly, 37, 1969, 34-49.
98. _____. "Perception of the Environment," University of Birmingham, Centre for Urban and Regional Studies Occasional Paper No. 17, 1971.
99. Gould, Peter. "A Bibliography of Space Searching Procedures for Geographers," Pennsylvania State University, Department of Geography Research Note, 1965.
100. _____. "The Decision Process and Entrepreneurial Returns," Manchester School of Economics and Social Studies Papers, 34, 1966, 247-67.
101. _____. "Geographic Exposition, Information and Location," pp. 25-40 in: National Academy of Sciences, Geographical Perspectives and Urban Problems. Washington, D.C.: National Academy of Sciences, 1973.

102. _____. "Man Against His Environment: A Game Theoretic Framework," Annals, Association of American Geographers, 53, 1963, 290-97.
103. _____. "On the Geographical Interpretation of Eigenvalues," Transactions of the Institute of British Geographers, 42, 1967, 53-86.
104. _____. "On Mental Maps." Michigan Inter-University Community of Mathematical Geographers Discussion Paper No. 9, 1966.
105. _____. "Problems of Space Preference Measures and Relationships," Geographical Analysis, 1, 1969, 31-44.
106. _____. "Space Searching Procedures in Geography and the Social Sciences." Honolulu: University of Hawaii, Social Science Research Institute, Working Paper Series No. 1, 1966.
107. _____. Spatial Diffusion. Washington, D.C.: Association of American Geographers (Commission on College Geography, Resource Paper No. 4), 1969.
108. _____. "The Structure of Space Preferences in Tanzania," Area, 1969, 29-35.
109. _____. "Structuring Information on Spacio-Temporal Preferences," Journal of Regional Science, 7, 1967.
110. _____ and D. Ola. "The Perception of Residential Desirability in the Western Region of Nigeria," Environment and Planning, 2, 1970, 73-87.
111. _____ and Rodney White. Mental Maps. Baltimore: Penguin Books, 1974.
112. _____ and _____. "The Mental Maps of British School Leavers," Regional Studies, 2, 1968, 161-82.
113. Green, B. L. and H. A. Wadsworth. "Campers: What Affects Participation and What Do They Want?" Purdue Agricultural Experiment Station, Research Bulletin No. 823, December 1966.
114. Greer-Wootten, Bryan. A Bibliography of Statistical Applications in Geography. (Commission on College Geography, Technical Paper No. 9). Washington, D.C.: Association of American Geographers, 1972.
115. _____, and Gillian Gilmour. "Distance and Directional Bias in Migration Patterns in Depreciating Metropolitan Areas," Proceedings of the Association of American Geographers, 2, 1970.

116. Griffin, F. L. "The Center of Population for Various Continuous Distributions of Population Over Areas of Various Shapes," Metron, June 1933, 11-15.
117. Griffiths, J. C. Scientific Method in the Analysis of Sediments. New York: McGraw Hill Book Company, 1967.
118. Guter, R. S. "On the Probability of Detecting a Region by Linear Search," Theory of Probability and Its Applications, 9, 1964, 331-33.
119. Hansen, N. M. "Development Pole Theory in a Regional Context," Kyklos, 20, 1967.
120. Hansen, W. G. "How Accessibility Shapes Land Use," Journal of the American Institute of Planners, 25, 1959, 73-76.
121. Hart, John Fraser. "Central Tendency in Areal Distributions," Economic Geography, 30, 1954, 48-59.
122. Hart, Roger A., and Gary T. Moore. "The Development of Spatial Cognition: A Review," Clark University, Place Perception Research Report No. 7, 1971.
123. Hartshorne, Richard. "The Concept of Geography as a Science of Space, from Kant and Humboldt to Hettner," Annals, Association of American Geographers, 48, 1958, 97-108.
124. Harvey, David. "Behavioral Postulates and the Construction of Theory in Human Geography," Bristol, England: University of Bristol, Department of Geography Seminar Paper Series No. 6, 1967, 7-8.
125. Harvey, Milton E. "Social Change and Ethnic Relocation in Developing Africa," Geografiska Annaler, 53B, 1971, 94-106.
126. Hayford, John F. "What is the Center of an Area or the Center of a Population?" Journal of the American Statistical Association, 8, June 1902, 47-58.
127. Hines, L. G. "Wilderness, Economic Choice, Values, and the Androscoggin," pp. 74-80 in: McCloskey, M. E., and Gilligan, J. P., eds., Wilderness and the Quality of Life. San Francisco: Sierra Club, 1969.
128. Hinzmann, Gordon A., Jr. "A Cognitive Perspective on Accessibility: Environmental Factors Important to the Construction of Images of Accessibility," The Monadnock, XLVI, 1972, 32-38.

129. Holsti, O. R. "Perceptions of Time, Perceptions of Alternatives and Pattern Communications as Factors in Crisis Decision-Making," Papers, Peace Research Society, 3, 1965, 79-120.
130. Hooson, D.J.M. "The Distribution of Population as the Essential Geographical Expression," Canadian Geographer, 17, 1960, 10-20.
131. Horton, Frank E., and John F. Hultquist. "Urban Household Travel Patterns: Definition and Relationship to Household Characteristics," East Lakes Geographer, 7, 1971, 37-48.
132. _____, and David R. Reynolds. "Action Space Differentials in Cities," pp. 83-104 in: McConnell, H., and Yaseen, D. W., eds. Models of Spatial Variation. DeKalb, Illinois: Northern Illinois University Press, 1971.
133. _____ and _____. "Behavioral Implications of Changes in Urban Spatial Structure," in: Brown, L. A., and Moore, E. G., eds., Papers Toward the Understanding of Change in Urban Spatial Structure. Worcester, Massachusetts: Economic Geography Yearbook Series, 1970.
134. _____ and _____. "Effects of Urban Spatial Structure on Individual Behavior," Economic Geography, 47, January 1971, 36-48.
135. _____ and _____. "Intra-Urban Migration and the Perception of Residential Quality," in: Brown, Lawrence A., "Population and Migration in an Urban Context: A Spatial Perspective." Columbus, Ohio: Ohio State University, Department of Geography Discussion Paper No. 13, 1970. (Also in: McConnell, H., and Yaseen, D. W., eds., Models of Spatial Variation. DeKalb, Illinois: Northern Illinois University Press, 1971.
136. _____ and _____. "An Investigation of Individual Action Spaces: A Progress Report," Proceedings of the Association of American Geographers, 1, 1969, 70-75.
137. Hudson, John C. "A Model of Spatial Relations," Geographical Analysis, 1, July 1969, 260-71.
138. Huff, David L. "Defining and Estimating a Trading Area," Journal of Marketing, 28, July 1964, 34-38. (reprinted: pp. 161-170 in: Ambrose, Peter, Analytical Human Geography. New York: American Elsevier, 1969.

139. _____. Determination of Intra-Urban Retail Trade Areas. Los Angeles: University of California, Real Estate Research Program, 1962.
140. _____. "A Probabilistic Analysis of Consumer Spatial Behaviour," pp. 444-50 in: Decker, W. S., ed., Emerging Concepts in Marketing. Chicago: American Marketing Association, 1963.
141. Hultquist, John; John Holmes; and Lawrence A. Brown. "CENTRO: A Program for Centographic Measures," Columbus, Ohio: Ohio State University, Department of Geography Discussion Paper No. 21, 1970.
142. Isard, Walter, and Michael F. Dacey. "On the Projection of Individual Behavior in Regional Analysis," Journal of Regional Science, 4, 1962, 1-34 and 51-83.
143. _____, and Thomas A. Reiner. "Aspects of Decision-Making Theory and Regional Science," in: Karaska, Gerald, and Bramhall, David, eds., Locational Analysis in Manufacturing. Cambridge: Harvard University Press, 1968.
144. _____ and _____. "Use of Statistical Decision Theory in Regional Planning," Regional Science Association, Papers and Proceedings, 10, 1963, 1-7.
145. _____ and Tony E. Smith. "On Social Decision Procedures for Conflict Situations," Peace Research Society Papers, 8, 1968, 1-29.
146. _____, et. al. "On the Linkages of Socio-Economic and Ecological Systems," Papers of the Regional Science Association, 21, 1968.
147. Janelle, Donald. "Spatial Reorganization," Annals, Association of American Geographers, 59, June 1969, 348-64.
148. Jeans, D. N., and M. I. Logan. "A Reconnaissance Survey of Population Change in the Sydney Metropolitan Area, 1955-1959," Australian Geographer, 13, 1961.
149. Jeffrey, R. C. The Logic of Decision. New York: McGraw-Hill Book Company, 1965.
150. Jensen, H.B.H. "Patterns of Left-Wing Voting in Denmark," unpublished M.A. Thesis, Department of Geography, Ohio State University, Columbus, Ohio, 1968.

151. Johnson, Hugh A. Publications on Outdoor Recreation Research, 1962-66, by Staff of Economic Research Service. Washington, D.C.: U. S. Department of Agriculture, Economic Research Service ERS-346, June 1967.
152. Johnston, R. J. "Activity Spaces and Residential Preferences: Some Tests of the Hypothesis of Sectoral Mental Maps," Economic Geography, 48, April 1972, 203-11.
153. _____. "Mental Maps of the City: Suburban Preference Patterns," Environment and Planning, 3, 1971, 63-72.
154. Kain, John F. Commuting and the Residential Decisions of Chicago and Detroit Central Business District Workers. Santa Monica, California: The Rand Corporation (Rand P-2735), April 1963.
155. _____. A Contribution to the Urban Transportation Debate: An Econometric Model of Urban Residential and Travel Behavior. Santa Monica, California: The Rand Corporation (Rand P-2667), November 1962.
156. _____. "The Journey-to-Work as a Determinant of Residential Location," Papers of the Regional Science Association, 9, 1962, 137-60.
157. _____. A Multiple Equation Model of Household Locational and Tripmaking Behavior. Santa Monica, California: The Rand Corporation (Rand RM-3086-FF), April 1962.
158. Kaiser, Edward J. A Producer Model for Residential Growth. Chapel Hill, North Carolina: Institute for Research in the Social Sciences, University of North Carolina, 1967.
159. _____ and S. F. Weiss. "Some Components of a Linked Model for the Residential Development Decision Process," Proceedings of the Association of American Geographers, 1, 1969, 75-79.
160. Kansky, Karel J. "Travel Patterns of Urban Residents," Transportation Science (Journal of the Transportation Section of the Operations Research Society of America), 1, 1967.
161. Kates, Robert W. Hazard and Choice Perception in Flood Plain Management. Chicago: University of Chicago Press (Research Paper No. 78), 1962.
162. _____. "Perceptual Regions and Regional Perception in Flood Plain Management," Papers of the Regional Science Association, 2, 1963.

163. _____. "Stimulus and Symbol: The View from the Bridge," Journal of Social Issues, 22, 1966, 21-28.
164. _____ and J. Wohwill, eds. "Man's Response to the Physical Environment," Journal of Social Issues, 22, October 1966, special issue.
165. Katzman, Natan. "Communication Flow and Social Entropy," Ekistics, 29, March 1970, 212-19.
166. Kenkel, W. F. "The Family Moving Decision Process," in: Family Mobility in Our Dynamic Society. Ames, Iowa: Iowa State University Press, 1965.
167. King, Leslie J. "The Analysis of Spatial Form and Its Relation to Geographic Theory," Annals, Association of American Geographers, 59, September 1969, 573-95.
168. _____. "Approaches to Locational Analysis: An Overview," East Lakes Geographer, 2, 1966, 1-16.
169. Koch, G. David. "The 1940 Population Center for the United States," Journal of Geography, 41, 1942, 272-75.
170. Kohl, Johann Georg. Der Verkehr und die Ansiedlung der Menschen in ihrer Abhängigkeit von der Gestaltung der Erdoberfläche. Leipzig: Arnoldische Buchhandlung, 1841, second edition, 1850.
171. Kohn, Clyde F. "The 1960's: A Decade of Progress in Geographical Research and Development," Annals, Association of American Geographers, 60, 1970, 211-19.
172. Konstantinov, O. A. "Ekonomicheskaya geografiya v geograficheskii obschestva za sorok let sovetskoi vlasti," Geograficheskii Sbornik, 11, 1957, 131-87. (For translation, see Poulsen, Thomas M.).
173. Lansing, John B. Residential Location and Urban Mobility. Chapel Hill, North Carolina: Institute for Research in the Social Sciences, University of North Carolina, 1964.
174. _____. Residential Location and Urban Mobility: The Second Wave of Interviews. Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan, 1966.
175. _____ and Gary Hendricks. Automobile Ownership and Residential Density. Ann Arbor: Institute for Social Research, University of Michigan, 1967.

176. Lansing, J. B.; C. W. Clifton; and J. N. Morgan. New Homes and Poor People: A Study of Chains of Moves. Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan, 1969.
177. LaPage, Wilbur F. "Camper Characteristics Differ at Public and Commercial Campgrounds in New England," U. S. Forest Service Research Note, NE-59, 1967.
178. Lee, Douglas B. Analysis and Description of Residential Segregation. Ithaca: Center for Housing and Environmental Studies, Cornell University, 1966.
179. Lee, Terence. "Perceived Distance as a Function of Direction in the City," Environment and Behavior, 11, 1970.
180. Lefever, D. Welty. "Measuring Geographic Concentration by Means of the Standard Deviatcional Ellipse," American Journal of Sociology, 32, 1926, 88-94.
181. Lewin, Kurt. Field Theory in the Social Sciences. New York: Harper and Row, 1951.
182. Logan, M. I. "Locational Behavior and Manufacturing Firms in Urban Areas," Annals, Association of American Geographers, 56, 1956, 451-66.
183. Lotka, A. J. "Editor's Note on the Center of Population and Point of Minimum Aggregate Travel," Journal of the American Statistical Association, 25, (New Series), December 1930, 447-52. (Includes a translation, in part, of the Gini and Galvani article (herein cited)).
184. Lotka, A. J. Elements of Mathematical Biology. New York: Dover Publications, 1966.
185. Lowenthal, David. "The American Scene," Geographical Review, 58, 1968, 61-88.
186. _____. "English Landscape Tastes," Geographical Review, 55, 1965, 188-222.
187. _____, ed. Environmental Perception and Behavior. Chicago: University of Chicago Press (Research Paper No. 109), 1967.
188. _____. "Geography, Experience, and Imagination: Towards a Geographical Epistemology," Annals, Association of American Geographers, 51, 1961, 241-60.
189. _____. "The Nature of Perceived and Imagined Environments," Environment and Behavior, 4, 1972, 189-207.

190. _____. "Recreation Habits and Values: Implications for Landscape Quality," pp. 103-28 in: Dansereau, Pierre, ed., Challenge for Survival: Land, Air, and Water for Man in Megalopolis. New York: Columbia University Press, 1970.
191. _____. "Research in Environmental Perception and Behavior: Perspectives on Current Problems," Environment and Behavior, 4, 1972, 333-42.
192. _____ and Hugh C. Prince. "The English Landscape," Geographical Review, 54, 1964, 309-46.
193. _____ and Marguita Riel. Publications in Environmental Perception. New York: American Geographical Society, 1972.
194. Lucas, Robert C. "Comments Made for the Conference on Water Resources Research and Educational Needs in Minnesota," Water Resources Research Center, Bulletin 5. Minneapolis: University of Minnesota, March 1967, 70-74.
195. _____. "The Contribution of Environmental Research to Wilderness Policy Decisions," Journal of Social Issues, 22, 1966, 115-26.
196. _____. "The Quetico-Superior Area: Recreational Use in Relation to Capacity," unpublished Ph.D. Thesis, University of Minnesota, 1962.
197. _____. Recreational Use of the Quetico-Superior Area. Lake Forest Experiment Station, Research Paper LS-8, 1964.
198. _____. "The Status of Recreation Resources Related to Users," Proceedings of the Society of American Foresters, 161, 1963, 912-14.
199. _____. "Wilderness Perception and Use: The Example of the Boundary Waters Canoe Area," Natural Resources Journal, 3, 1964, 394-411.
200. _____ and George B. Priddle. "Environmental Perception: A Comparison of Two Wilderness Areas," Annals, Association of American Geographers, LIV, 1964, 428.
201. _____ and Dennis L. Schweitzer. Outdoor Recreation Surveys, Length of Stay Bias and Its Correction by Computer. Washington, D.C.: U. S. Forest Service, U. S. Department of Agriculture, October 1965.
202. Luce, D. and H. Raiffa. Games and Decisions. New York: John Wiley and Sons, Inc., 1957.

203. Lynch, Kevin. The Image of the City. Cambridge: MIT Press, 1960.
204. Manners, Ian R., and Marvin W. Mikesell. Perspectives on Environment. Washington, D.C.: Association of American Geographers (Commission on College Geography, Publication No. 13), 1974.
205. Maranza, F. E. "On the Location of Supply Points to Minimum Transport Costs," Operational Research Quarterly, 15, 1964, 261-70.
206. Marble, Duane F., and S. R. Bowlby. "Direct and Indirect Measurement of Urban Information Fields: Some Examples," Evanston, Illinois: Technical Report No. 10, Spatial Diffusion Study, Contract Nonr 1228, 33, Department of Geography, Northwestern University, 1968.
207. _____ and John D. Nystuen. "An Approach to the Direct Measurement of Community Mean Information Fields," Papers of the Regional Science Association, 11, 1962, 99-109.
208. McConnell, H., and D. W. Yaseen, eds. Models of Spatial Variation. DeKalb, Illinois: Northern Illinois University Press, 1971.
209. McHarg, Ian L. Design with Nature. Garden City, New York: The Natural History Press for the American Museum of Natural History, 1969.
210. McMulty, Michael. "Analysis of the Directional Components of Migration Streams," University of Iowa, Department of Geography Discussion Paper No. 15, 1970.
211. Mercer, D. C. "The Geography of Leisure--A Contemporary Growth Point," Geography, 55, July 1970, 261-73.
212. _____. "Urban Recreational Hinterlands: A Review and Example," Professional Geographer, 22, March 1970, 74-78.
213. Minshall, C. W. "A Model of Residential Site Selection: The Jewish Population of Columbus, Ohio," unpublished Ph.D. Dissertation, Ohio State University, 1971.
214. Mitchell, James K. "Natural Hazards Research," pp. 311-341 in: Marvin W., Perspectives on Environment. Washington, D.C.: Association of American Geographers (Commission on College Geography, Publication No. 13), 1974.
215. Mitchell, Lisle Serles. "Toward a Theory of Public Urban Recreation," Proceedings, of the Association of American Geographers, 1969, 103-8.

216. Moore, Eric G. "Comments on the Use of Ecological Models in the Study of Residential Mobility in the City," Economic Geography, 47, 1971, 73-84.
217. _____. "Intra-Urban Residential Mobility and Urban Spatial Structure," in: Brown, Lawrence A., ed., "Population and Migration in an Urban Context: A Spatial Perspective." Columbus: Ohio State University, Department of Geography Discussion Paper No. 13, 1970.
218. _____. "Models of Migration and the Intraurban Case," Australia-New Zealand Journal of Sociology, 6, 1966, 16-37.
219. _____. "The Nature of Intra-Urban Migration and Some Relevant Research Strategies," Proceedings, of the Association of American Geographers, 1, 1969, 113-16.
220. _____. Residential Mobility in the City. (Commission on College Geography, Resource Paper No. 13). Washington, D.C.: Association of American Geographers, 1972.
221. _____. "Residential Mobility in an Urban Context: A Systems Approach," unpublished Ph.D. Dissertation, University of Queensland (Australia), 1967.
222. _____. "Some Spatial Properties of Urban Contact Fields," Geographical Analysis, 2, October 1970, 376-86.
223. _____. "The Structure of Intra-Urban Movement Rates: An Ecological Model," Urban Studies, 6, 1969, 17-33.
224. _____ and Lawrence A. Brown. "Spatial Properties of Urban Contact Fields: An Empirical Analysis." Evanston, Illinois: Northwestern University, Department of Geography Discussion Paper No. 52, November 1969.
225. Morrill, Richard L. "The Distribution of Migration Distances," Papers of the Regional Science Association, 11, 1963, 75-84.
226. _____. "Shape of Diffusion in Space and Time," Economic Geography, 46, 1970, 259-68.
227. _____, and R. Earickson. "Problems in Modelling Interaction," in: Cox, Kevin R., and Gollidge, Reginald G., eds., Behavioral Problems in Geography: A Symposium. Evanston, Illinois: Northwestern University Studies in Geography No. 17, 1969.

228. _____ and Forrest R. Pitts. "Marriage, Migration, and the Mean Information Field: A Study in Uniqueness and Generality," Annals, Association of American Geographers, 57, 1967, 401-22.
229. Morrison, P. A. "Chronic Movers and the Future Distribution of Population: A Longitudinal Analysis," Demography, 8, 1971, 181-84.
230. _____. "Duration of Residence and Prospective Migration: The Evaluation of a Stochastic Model," Demography, 4, 1967, 553-61.
231. Mueller, Eva, and J. Morgan. "Location Decisions of Manufacturers," American Economic Review, 52, 1962, 204-17. (Also in: Karaska, Gerald, and Bramhall, David, eds., Locational Analysis in Manufacturing. Cambridge: Harvard University Press, 1968.
232. Murphy, Raymond E., and H. E. Spittal. "Movement of the Center of Coalmining in the Appalachian Plateaux," Geographical Review, 35, 1945, 624-33.
233. Murphy, Richard E. "Geography and Outdoor Recreation: An Opportunity and an Obligation," Professional Geographer, 15, 1963, 33-34.
234. Muth, Richard F. Cities and Housing. Chicago: University of Chicago Press, 1969.
235. _____. "The Spatial Structure of the Housing Market," Papers of the Regional Science Association, 7, 1962, 207-20.
236. Myers, G. C.; R. McGinnis; and G. Masnik. "The Duration of Residence Approach to a Dynamic Stochastic Model of Internal Migration: The Axiom of Cumulative Inertia," Eugenics Quarterly, 14, 1967, 121-26.
237. National Academy of Sciences. A Program for Outdoor Recreation Research. Washington, D.C.: The Academy, 1969.
238. Neft, David S. Statistical Analysis for Areal Distributions. Philadelphia: Regional Science Research Institute, Monograph Series No. 2, 1966.
239. Nelson, J. G., and R. W. Butler. "Recreation and the Environment," pp. 290-310 in: Manners, Ian R., and Mikesell, Marvin W., Perspectives on Environment. Washington, D.C.: Association of American Geographers (Commission on College Geography, Publication No. 13, 1974.)
240. Newman, J. S. "Residential Mobility in the Tempo of Family Formation," unpublished Ph.D. Dissertation, Johns Hopkins University, 1970.

241. Olsson, Gunnar. "Trends in Spatial Model Building: An Overview," Geographical Analysis, 1, 1969, 219-24.
242. _____. "Verification in Geography," oral presentation given to the Faculty Seminar in Geography, University of Michigan, January 1968. (Mimeographed)
243. _____ and Stephen Gale. "Spatial Theory and Human Behavior," Papers of the Regional Science Association, 1969, 229-42.
244. Pendakur, V. Setty, and G. R. Brown. "Accessibility and Environmental Quality," Highway Research Record, 277, 1969, 40.
245. Persson, O. "Distance Methods," Studia Forestalia Suecica, 15, 1964, 68.
246. Peterson, George L. "A Model of Preference: Quantitative Analysis of the Perception of the Visual Appearance of Residential Neighborhoods," Journal of Regional Science, 7, 1967, 19-32.
247. Porter, P. W. "Environmental Potentials and Economic Opportunities--A Background for Cultural Adaption," American Anthropologist, 67, 1965, 409-20.
248. _____. "What is the Point of Minimum Aggregate Travel?" Annals, of the Association of American Geographers, 53, 1963, 224-32.
249. Poulsen, Thomas M. "Centrography in Russian Geography," Annals, of the Association of American Geographers, 49, 1959, 326-27.
250. Pred, Allan. Behavior and Location. Lund, Sweden: Lund Studies in Geography, No. 27B, 1967.
251. Price, Daniel O. "Distance and Direction as Vectors of Internal Migration, 1935 to 1940," Social Forces, 27, October 1948.
252. Rees, P. H. "Concepts of Social Space," Chapter 10 in: Berry, B.J.L., and Horton, F. E., eds., Geographic Perspectives on Urban Systems. Englewood Cliffs, New Jersey: Prentice-Hall, 1970.
253. Reynolds, David R. "A 'Friends-and-Neighbors' Voting Model as a Spatial Interaction Model for Electoral Geography," in: Cox, Kevin R., and Golledge, Reginal G., eds., Behavioral Problems in Geography: A Symposium. Evanston, Illinois: Northwestern University Studies in Geography No. 17, 1969.

254. Roseman, Curtis C. "Migration as a Spatial and Temporal Process," Annals, Association of American Geographers, 61, 1971, 589-98.
255. Rossi, Peter H. Why Families Move: A Study in the Social Psychology of Urban Residential Mobility. Glencoe, New York: The Free Press, 1955.
256. Robinson, W. S. "Ecological Correlations and the Behavior of Individuals," American Sociological Review, 15, 1950, 351-57.
257. Rushton, Gerard. "Analysis of Spatial Behavior by Revealed Space Preferences," Annals, Association of American Geographers, 59, 1969, 391-400.
258. _____. "Behavioral Correlates of Urban Spatial Structure," Economic Geography, 47, 1971, 49-58.
259. _____. "The Scaling of Locational Preferences," in: Cox, Kevin R., and Colledge, Reginald G., eds., Behavioral Problems in Geography: A Symposium. Evanston, Illinois: Northwestern University Studies in Geography No. 17, 1969.
260. _____. "Temporal Changes in Space Preference Structures," Proceedings of the Association of American Geographers, 1, 1969, 129-32.
261. Ryan, T. A., and M. S. Ryan. "Geographical Orientation," American Journal of Psychology, 53, 1940, 204-215.
262. Saarinen, Thomas F. "Environmental Perception," pp. 63-99 in: Bacon, Philip, ed., Focus on Geography: Key Concepts and Teaching Strategies. Washington, D.C.: National Council for the Social Studies, 1970.
263. _____. "Environmental Perception," pp. 252-289 in: Manners, Ian R., and Mikesell, Marvin W., Perspectives on Environment. Washington, D.C.: Association of American Geographers (Commission on College Geography, Publication No. 13), 1974.
264. _____. Perception of the Environment. (Commission on College Geography, Resource Paper No. 5). Washington, D.C.: Association of American Geographers, 1969.
265. _____. Perception of the Drought Hazard on the Great Plains. Chicago: University of Chicago Press (Research Paper No. 106), 1966.

266. _____. "Student Views of the World," pp. 148-161 in: Dooms, Roger M., and Stea, David, eds., Image and Environment. Chicago: Aldine, 1973.
267. _____. "The Use of Projective Techniques in Geographic Research," in: Ittelson, W. H., ed., Environment and Cognition. New York: Academic Press, forthcoming.
268. _____ and Ronald U. Cooke. "Public Perception of Environmental Quality in Tucson, Arizona," Journal of the Arizona Academy of Science, 6, 1971, 260-74.
269. Scates, Douglas E. "Locating the Median of the Population of the United States," Metron, 11, 1933, 49-65.
270. _____ and Mrs. Lucille Mack Van Nortwick. "The Influence of Restrictive Routes Upon the Center of Minimum Aggregate Travel," Metron, 23, 1937, 77-91.
271. Schmidt-Koenig, K. "Current Aspects in Bird Orientations," Advances in the Study of Behavior, 1, 1965, 217-72.
272. _____. "Initial Orientation and Distances of Displacement in Pigeon Homing," Nature, 201, 1964, 638.
273. Sebestyen, G. S. Decision-Making Processes in Pattern Recognition. New York: The Macmillan Company, 1962.
274. Sewell, W.R.D., and I. Burton. Perceptions and Attitudes in Resources Management. Ottawa: Department of Energy, Mines and Resources (Resource Paper No. 2), 1971.
275. Shachar, A. "Some Applications of Geo-statistical Methods in Urban Research," Papers, Regional Science Association; 18, 1967, 197-206.
276. Silk, John. "Search Behaviour: General Characteristics and Review of Literature in the Behavioural Sciences," Geographical Paper No. GP-7, Department of Geography, University of Reading, Whiteknights Reading RG6 2AF, England, February 1971.
277. Simmons, James W. "Changing Residence in the City: A Review of Intraurban Mobility," The Geographical Review, 58, 1968, 622-51.
278. Simon, Herbert A. "A Behavioral Model of Rational Choice," Quarterly Journal of Economics, 69, 1952, 99-118.
279. _____. "A Formal Theory of Interaction in Social Groups," American Sociological Review, 17, 1952, 202.

280. _____. Models of Man. New York: John Wiley & Sons, 1957.
281. _____. "The Role of Expectations in an Adaptive or Behavioral Model," in: Bowman, M. J., ed., Expectations, Uncertainty, and Business Behavior. New York: Social Sciences Research Council, 1958.
282. Sims, John H., and Duane D. Baumann. Human Behavior and the Environment: Interactions Between Man and His Physical World. Chicago: Maarufa Press, Inc., 1974.
283. Sonnenfeld, Joseph. "Environmental Perception and Adaption Level in the Arctic," pp. 42-59 in: Lowenthal, David, ed., Environmental Perception and Behavior. Chicago: University of Chicago Press (Research Paper No. 109), 1967.
284. _____. "Equivalence and Distortion of the Perceptual Environment," Environment and Behavior, 1, 1969, 83-99.
285. _____. "Geography, Perception, and the Behavioral Environment," pp. 244-250 in: English, Paul Ward, and Mayfield, Robert C., Man, Space, and Environment. New York: Oxford University Press, 1972.
286. _____. "Social Interaction and Environmental Relationship," Environment and Behavior, 4, 1972, 267-77.
287. _____. "Variable Values in Space Landscape: An Inquiry into the Nature of Environmental Necessity," Journal of Social Issues, 22, 1966, 71-82.
288. Speare, A. "Home Ownership, Life Cycle Stage, and Residential Mobility," Demography, 7, 1970, 449-58.
289. Stansfield, Charles A. "The Geography of Resorts: Problems and Potentials," Professional Geographer, XXIII, 1971, 166-67.
290. Stea, David. "On Measurement of Mental Maps: An Experimental Model for Studying Conceptual Spaces," in: Cox, Kevin R., and Golledge, Reginald G., eds., Behavioral Problems in Geography: A Symposium. Evanston, Illinois: Northwestern University Studies in Geography No. 17, 1969.
291. _____. "Space, Territory and Human Movements," Landscape, 15, 1965, 13-16.
292. _____ and Roger Downs, eds. "Cognitive Representations of Man's Spatial Environment," Environment and Behavior, 2, 1970, entire issue.

293. Stegman, M. A. "Accessibility Models and Residential Location," Journal of the American Institute of Planners, 35, 1969, 35-43.
294. Stephens, M. A. "Exact and Approximate Tests for Directions, I and II," Biometrika, 49, 1962, 463-77 and 547-52.
295. Stowers, J., and L. W. Kanwit. "The Use of Behavioral Surveys in Forecasting Transportation Requirements," Highway Research Record, 115, 1965, 44-51.
296. Sullenger, T. Earl. "Intra-Urban Mobility," Sociology and Social Research, 1932, 16-24.
297. Sviatlovsky, E. E. "La Centrographie," Comptes Rendus du Congres International de Geographie, Tome 3, 376-80.
298. _____. Centrographie II, 1933.
299. _____. "Centrographie et Geographie des Villes," Comptes Rendus du Congres International de Geographie, Tome 3, 184-85.
300. _____. "Centrographie et les Regions," Comptes Rendus du Congres International de Geographie, Tome 4, 216-17.
301. _____. Introduction a la Centrographie. Les Nouvelles de la Societe Geographique Russe d'Etat, Les Bulletins d'Information du Laboratoire pour l'Anniversaire de 15 ans de l'Octobre, 1930.
302. _____. "Methodes Centrographique, Resume du rapport au Congres International de Geographie, 1934," Resumes des Communications, Varsovie, 1934, 137-38.
303. _____ and Walter Crosby Bells. "The Centrographical Method and Regional Analysis," Geographical Review, 27, April 1937, 240-57.
304. Thompson, Donald L. "New Concept: Subjective Distance," pp. 197-203 in: Ambrose, Peter, Analytical Human Geography. New York: American Elsevier, 1969.
305. Timms, D. "Quantitative Techniques in Urban Social Geography," in: Chorley, Richard J., and Haggett, Peter, eds., Frontiers in Geographical Teaching. London: Edward Arnold, 1965.
306. Tolman, E. C. "Cognitive Maps in Rats and Man," The Psychological Review, 56, 1948, 189-215.

307. Trowbridge, C. C. "On Fundamental Methods of Orientation and Imaginary Maps," Science, 38, 1913, 888-97.
308. Van Arsdol, M. D., Jr., G. Sabagh, and E. W. Butler. "Retrospective and Subsequent Metropolitan Residential Mobility," Demography, 6, 1969, 249-67.
309. Van Doren, Carlton S. "A Recreational Travel Model for Predicting Campers at Michigan State Parks," unpublished Ph.D. Dissertation, Department of Geography, Michigan State University, 1966.
310. _____, Jack B. Ellis, and D. N. Milstein. "Destination Models: Developing a Camping Attractor Index for Michigan State Parks," Chapter V in: Michigan Outdoor Recreation Demand Study: Volume 1, Methods and Models. Lansing, Michigan: Michigan Department of Commerce for Michigan Department of Conservation, 1966, pp. 5.62-5.79.
311. Wall, Geoffrey. "The Status of Recreation Studies in Britain," Professional Geographer, XXV, 1973, 47-51.
312. Warntz, William, and David S. Neft. "Contributions to a Statistical Methodology for Area Distributions," Journal of Regional Science, 2, 1960, 47-66.
313. Waterman, T. H. "The Analysis of Spatial Orientation," Ergebnisse Biologie, 26, 1963, 98-117.
314. Weiss, Shirley F., John E. Smith, Edward J. Kaiser and Kenneth B. Kenny. Residential Developer Decisions. Chapel Hill, North Carolina: Institute for Research in Social Sciences, University of North Carolina, 1966.
315. Wheeler, James O., and Frederick P. Stutz. "Spatial Dimensions of Urban Social Travel," Annals, Association of American Geographers, 61, 1971, 371-86.
316. White, Gilbert F. "Formation and Role of Public Attitudes," in: Jarrett, Henry, ed., Environmental Quality in a Growing Economy. Baltimore: Johns Hopkins Press, 1966.
317. White, Rodney. "The Measurement of Spatial Perception." Bristol, England: University of Bristol, Department of Geography, Seminar Series A, 8, 1967.
318. _____. "Space Preferences and Migration: A Multi-dimensional Analysis of the Spatial Preferences of British School Leavers," M.S. Thesis, Department of Geography, Pennsylvania State University, 1967.
319. Willis, C. J. Age and Area: A Study in Geographical Distribution and Origin of Species. Cambridge: Cambridge University Press, 1922.

320. Wilson, Alan G. "The Use of Analogies in Geography," Geographical Analysis, 1, July 1969, 225-33.
321. Wight, Ernest A., Jr. "Mind, Meaning, and Milieu: Psychological Need and Designed Environments," The Monadnock, XLV, 1971, 43-51.
322. Wingo, Lowdon, Jr. "An Economic Model of the Utilization of Urban Land for Residential Purposes," Papers of the Regional Science Association, 7, 1962, 191-205.
323. Wiseman, R. F., and C. S. Roseman. "Urban Socio-Economic Structure and Biases in Travel Behavior," Proceedings of the Association of American Geographers, 4, 1972.
324. Wolfe, Roy I. "Parameters of Recreational Travel in Ontario--A Progress Report," Proceedings of the Canadian Good Roads Association Meetings, Saskatoon, Saskatchewan, October 1965.
325. _____. "Perspective on Outdoor Recreation," Geographical Review, 54, 1964, 203-38.
326. _____. "Recreation Travel, The New Migration," Canadian Geographer, X, 1966, 1-14.
327. Wolpert, Julian. "The Basis for Stability of Interregional Transactions," Geographical Analysis, 1, 1969, 152-80.
328. _____. "Behavioral Aspects of the Decision to Migrate," Papers of the Regional Science Association, 15, 1965, 159-69.
329. _____. "The Decision Process in a Spatial Context," Annals, Association of American Geographers, 54, 1964, 537-38.
330. _____. "Departures from the Usual Environment in Locational Analysis," Annals, Association of American Geographers, 1970, 220-29.
331. _____. "Distance and Directional Bias in Inter-Urban Migratory Streams," Annals, Association of American Geographers, 57, 1967, 605-16.
332. _____. "Migration as an Adjustment to Environmental Stress," Journal of Social Issues, 22, 1966, 92-102.
333. _____. "A Strategy of Ambiguity in Locational Decisions," paper presented at the American Political Science Association Meeting, New York, New York, 1969.
334. _____ and R. Ginsberg. "The Transition to Interdependence in Locational Decisions," in Cox, Kevin R., and Golledge, Reginald G., eds., Behavioral Problems in Geography: A Symposium. Evanston, Illinois: Northwestern University Studies in Geography No. 17, 1969.

335. _____ and D. Zillman. "The Sequential Expansion of a Decision Model in a Spatial Context," Environment and Planning, 1, 1969, 91-104.
336. Yuill, Robert S. "The Standard Deviation Ellipse: An Updated Tool for Spatial Description," Geografiska Annaler, 53B, 1971, 28-39.
337. _____. "Spatial Behavior of Retail Customers: Some Empirical Measurements," Geografiska Annaler, 49B, 1967, 105-15.

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